

WHAT IS CLAIMED IS:

1. A system, comprising:

5 a node coupled to the inter-node network and including an active device, an interface, and an address network configured to transmit address packets between the active device and the interface;

10 an additional node coupled to the node by an inter-node network, wherein the additional node includes an additional address network;

15 wherein in response to a coherency message from the additional node via the inter-node network requesting an access right to a coherency unit, the interface is configured to send a first type of address packet on the address network if a global access state of the coherency unit in the node is a modified state and to send a second type of address packet on the address network if the global access state of the coherency unit in the node is not the modified state;

20 wherein if the active device is an owner of the coherency unit, the active device is configured to ignore the second type of address packet and to respond to the first type of address packet.

25 2. The system of claim 1, wherein the additional node includes an additional active device and an additional interface configured to send and receive coherency messages on the inter-node network, wherein the additional address network is configured to transmit address packets between the additional active device and the additional interface.

30 3. The system of claim 2, wherein the coherency message requests a read access right to the coherency unit, wherein the first type of address packet is a proxy read-to-

share-modified packet and wherein the second type of address packet is a proxy memory read packet.

4. The system of claim 3, wherein if the active device is the owner of the coherency unit, the active device is configured to send data corresponding to the coherency unit to the interface in response to receipt of the proxy read-to-share-modified packet.

5. The system of claim 4, wherein if the active device is the owner of the coherency unit, the active device is configured to transition an ownership responsibility for the coherency unit upon receipt of the proxy read-to-share-modified packet.

6. The system of claim 3, wherein the node includes a memory subsystem configured to send data corresponding to the coherency unit to the interface in response to the proxy memory read packet.

15 7. The system of claim 2, wherein the coherency message requests a write access right to the coherency unit, wherein the first type of address packet is a proxy read-to-own-modified packet and wherein the second type of address packet is a proxy read-to-own packet.

20 8. The system of claim 7, wherein if the active device is the owner of the coherency unit, the active device is configured to transition an ownership responsibility for the coherency unit upon receipt of the proxy read-to-own-modified packet and to send data corresponding to the coherency unit to the interface in response to receipt of the proxy read-to-own-modified packet, wherein the active device transitions an access right to the coherency unit upon sending the data.

25 9. The system of claim 7, wherein the node includes a memory subsystem configured to send data corresponding to the coherency unit in response to the proxy read-to-own packet.

10. The system of claim 2, wherein the address packet is an invalidating address packet, wherein the first type of address packet is a proxy invalidate-modified packet and wherein the second type of address packet is a proxy invalidate packet.

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11. The system of claim 10, wherein if the active device is the owner of the coherency unit, the active device is configured to transition an ownership responsibility for the coherency unit upon receipt of the proxy invalidate-modified packet and to send data corresponding to the coherency unit to the interface in response to receipt of the proxy 10 invalidate modified packet, wherein the active device is configured to transition an access right to the coherency unit upon sending the data.

12. The system of claim 10, wherein if the active device is not the owner of the coherency unit and has an access right to the coherency unit, the active device is 15 configured to transition the access right to the coherency unit to an invalid access right upon receipt of the proxy invalidate packet.

13. The system of claim 2, wherein the address network is configured to convey the first and second types of address packet from the interface to a directory in point-to-point 20 mode.

14. The system of claim 2, wherein the address network is configured to convey the first and second types of address packet from the interface in broadcast mode.

25 15. A node for use in a multi-node system, the node comprising:

a plurality of devices including a memory subsystem, an active device, and an interface configured to send and receive coherency messages on an inter-node network coupling nodes in the multi-node system;

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an address network configured to communicate address packets between the plurality of devices;

5 wherein in response to receiving a coherency message on the inter-node network requesting an access right to a coherency unit, the interface is configured to send a first type of address packet on the address network if the coherency unit is in a modified global access state in the node and to send a second type of address packet on the address network if the coherency unit is not in the modified global access state in the node;

10 wherein if the active device is an owner of the coherency unit, the active device is configured to ignore the second type of address packet and to respond to the first type of address packet.

15 16. The node of claim 15, wherein the coherency message requests a read access right to the coherency unit, wherein the first type of address packet is a proxy read-to-share-modified packet and wherein the second type of address packet is a proxy memory read packet.

20 17. The node of claim 16, wherein if the active device is the owner of the coherency unit, the active device is configured to send data corresponding to the coherency unit to the interface in response to receipt of the proxy read-to-share-modified packet.

25 18. The node of claim 17, wherein if the active device is the owner of the coherency unit, the active device is configured to transition an ownership responsibility for the coherency unit upon receipt of the proxy read-to-share-modified packet.

30 19. The node of claim 16, wherein the memory subsystem is configured to send data corresponding to the coherency unit to the interface in response to the proxy memory read packet.

20. The node of claim 15, wherein the coherency message requests a write access right to the coherency unit, wherein the first type of address packet is a proxy read-to-own-modified packet and wherein the second type of address packet is a proxy read-to-own packet.

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21. The node of claim 20, wherein if the active device is the owner of the coherency unit, the active device is configured to transition an ownership responsibility for the coherency unit upon receipt of the proxy read-to-own-modified packet and to send data corresponding to the coherency unit to the interface in response to receipt of the proxy read-to-own-modified packet, wherein the active device transitions an access right to the coherency unit upon sending the data.

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22. The node of claim 20, wherein the memory subsystem is configured to send data corresponding to the first coherency unit in response to the proxy read-to-own packet.

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23. The node of claim 15, wherein the address packet is an invalidating address packet, wherein the first type of address packet is a proxy invalidate-modified packet and wherein the second type of address packet is a proxy invalidate packet.

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24. The node of claim 23, wherein if the active device is the owner of the coherency unit, the active device is configured to transition an ownership responsibility for the coherency unit upon receipt of the proxy invalidate-modified packet and to send data corresponding to the coherency unit to the interface in response to receipt of the proxy invalidate modified packet.

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25. The node of claim 23, wherein if the active device is not the owner of the coherency unit and has an access right to the coherency unit, the active device is configured to transition the access right to the coherency unit to an invalid access right upon receipt of the proxy invalidate packet.

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26. The node of claim 15, wherein the interface includes a global access state cache indicating the global access state within the node of each of a plurality of recently accessed coherency units for which the node is a home node.

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27. The node of claim 26, wherein the interface is configured to check the global information cache included in the interface for the global access state of the coherency unit in the node, wherein if the global access state of the first coherency unit is not included in the global information cache, the first interface is configured to request the 10 global access state of the first coherency unit in the node from the memory.

28. The node of claim 15, wherein the global access state of the coherency unit in the node is indicated in the communication from the additional node.

15 29. The node of claim 15, wherein the address network is configured to convey the first and second types of address packet from the interface to a directory in point-to-point mode.

20 30. The node of claim 15, wherein the address network is configured to convey the first and second types of address packet from the interface to the plurality of devices in broadcast mode.

25 31. A method for use in a multi-node system, wherein the multi-node system includes a node and an additional node coupled by an inter-node network configured to transmit coherency messages between the node and the additional node, the method comprising:

an additional interface in the additional node sending on the inter-node network a coherency message requesting an access right to a coherency unit;

an interface in the node receiving the coherency message via the inter-node network and responsively sending an address packet on an address network included in the node, wherein the address packet is a first type of address packet if a global access state of the coherency unit in the node is a modified state and a second type of address packet if the global access state of the coherency unit in the node is not the modified state, wherein the address network conveys address packets between a plurality of devices in the node, wherein the plurality of devices includes the interface and an active device; and

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the active device in the node responding to the address packet if the address packet is the first type of address packet and ignoring the address packet if the address packet is the second type of address packet, wherein the active device is an owner of the coherency unit.

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32. The method of claim 31, wherein the coherency message from the additional interface requests a read access right to the coherency unit, wherein the first type of address packet is a proxy read-to-share-modified packet and wherein the second type of address packet is a proxy memory read packet.

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33. The method of claim 32, further comprising the active device sending data corresponding to the coherency unit to the interface in response to receipt of the proxy read-to-share-modified packet.

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34. The method of claim 32, further comprising the active device transitioning an ownership responsibility for the coherency unit upon receipt of the proxy read-to-share-modified packet.

35. The method of claim 32, further comprising a memory subsystem in the node sending data corresponding to the coherency unit to the interface in response to the proxy memory read packet.

5 36. The method of claim 31, wherein the coherency message from the interface requests a write access right to the first coherency unit, wherein the first type of address packet is a proxy read-to-own-modified packet and wherein the second type of address packet is a proxy read-to-own packet.

10 37. The method of claim 36, further comprising the active device transitioning an ownership responsibility for the coherency unit upon receipt of the proxy read-to-own-modified packet, sending data corresponding to the coherency unit to the interface in response to receipt of the proxy read-to-own-modified packet, and transitioning an access right to the coherency unit upon sending the data.

15 38. The method of claim 36, further comprising a memory subsystem in the node sending data corresponding to the coherency unit to the interface in response to the proxy read-to-own packet.

20 39. The method of claim 31, wherein the address packet is an invalidating address packet, wherein the first type of address packet is a proxy invalidate-modified packet and wherein the second type of address packet is a proxy invalidate packet.

40. The method of claim 39, further comprising the active device transitioning an ownership responsibility for the coherency unit upon receipt of the proxy-invalidate-modified packet and sending data corresponding to the coherency unit to the interface in response to receipt of the proxy-invalidate modified packet.

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41. The method of claim 40, further comprising another active device included in the node transitioning an access right to the coherency unit to an invalid access right upon receipt of the proxy-invalidate packet.

5 42. The method of claim 31, further comprising the address network conveying the first and second types of address packet from the interface to a directory in the node in point-to-point mode.

10 43. The method of claim 31, further comprising the address network conveying the first and second types of address packet from the interface to the active device in broadcast mode.

44. A system, comprising:

15 means for communicating coherency messages between a plurality of nodes;

a node included in the plurality of nodes, wherein the node includes a plurality of devices and means for communicating address packets between the plurality of devices, wherein the plurality of devices includes an active device and means for sending and receiving coherency messages on the means for communicating coherency messages; and

20 an additional node included in the plurality of nodes;

25 wherein in response to receiving a coherency message requesting an access right to a coherency unit via the means for communicating coherency messages between the plurality of nodes, the means for sending and receiving coherency messages sends a first type of address packet on the means for communicating address packets if a maximum allowable access right of the plurality of devices to the coherency unit is write access and sends a

second type of address packet on the means for communicating address packets if the maximum allowable access right of the plurality of devices to the coherency unit is not write access;

- 5 wherein if the active device is an owner of the coherency unit, the active device is configured to ignore the second type of address packet and to respond to the first type of address packet.